

Interactive comment on “Climate signatures of grape harvest dates” by M. Krieger et al.

Anonymous Referee #3

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This paper provides a descriptive analysis of correlations between Burgundy Grape Harvest Dates (GHD) and a variety of gridded datasets.

Paper is clearly presented. The figures should be improved, putting areas of non significant correlations in white, instead of masking the significant areas, which makes colour identification sometimes difficult.

But the scientific interest of this paper is poor. The few relevant conclusions of this paper are already well established.

SPECIFIC COMMENTS

* The criterion described as "correlation". I assume this is "Pearson product-moment correlation coefficient". Implicit then is the assumption that all relationships should be linear - why should they be linear? Linearity of relationships should be at least

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investigated. Note also that more robust measures of correlation may be used (Kendall, etc...).

* A significant correlation does not mean that the relationship is useful or high. Given the length of the series, any observed correlation greater than .19 will be significant at 0.05 level, but 0.19 is peanuts. It would lead to 4% of explained variance in a simple regression analysis. Apart from well known relationships (link between GHD and spring or summer relationships), the exhibited relationships are low, at best. At this stage, I would suggest to restrain the spatial coverage of the study to western Europe, rather than covering regions from Iceland to Oural.

* Grape growth is a complex biological process, where temperatures and precipitations play a role, possibly including those of the year before. Analysing each field separately will likely fail to find finer relationships. Multivariate statistical modelling of the phenomenon could help in understanding the relative influence of each factor, and probable interactions among them.

* Note that harvests usually occurring in September, correlation of GHD with SON season would have little meaning. Lag 1 and 2 winter relationships are... weak, at best. If authors continue in their study, a common tool used by "teleconnections adepts" is PCA analysis, and correlation to principal components.

* Stability of correlations over time.

Which criterion led to split the samples according to year 1947 (or 1948)? End of paragraph 4.3 : about what occurred during first and last half of century, is there any reference supporting those words?

Appart from homogeneity of datasets - which might play a crucial role there - since harvest dates highly depends on varieties, etc... , change in sign of weak winter correlations is not a very meaningful result.

More interesting is Figure 3 (b), that exhibits an increase in correlation. But this feature

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may also be the result of a non-linear relationship. During years characterized by colder summers, harvest occurs in any case before a given date, even if the grapes are not totally mature, in order to prevent icing - while early harvest is the sign of good maturation. Higher correlations would then be naturally observed during the latest warming phase. Additionally Pearson correlation is sensitive to outliers, influence of 2003 should be checked also.

Interactive comment on Clim. Past Discuss., 6, 1525, 2010.

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